



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/578,904

02/09/2007

Friedrich Boecking

R.306598

3238

2119 7590 08/06/2008
RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER

CERNOCH, STEVEN MICHAEL

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

08/06/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,904	Applicant(s) BOECKING, FRIEDRICH	
	Examiner STEVEN CERNOCH	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/12/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 3752

DETAILED ACTION

Claim Objections

Claim 12 objected to because of the following informalities: dependent upon cancelled claim 10. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 3752

Claims 11-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kienzler et al. (US Pub No 2003/0168526) in view of Schuerg et al. (US Pub No 2003/0075614).

Re claim 11, Kienzler et al. shows an injector for injecting fuel into combustion chambers of internal combustion engines, in particular a piezoelectric-actuator-controlled common rail injector, having control means, predominantly a piezoelectric actuator (paragraph 0022, line 6), deposited in an injector body (Fig. 1, 12) and operable via at least one booster piston (paragraph 0025, line 16) to actuate a control valve (Fig. 1, 40) received in a valve plate (24); having a nozzle body (12b) with a nozzle outlet (14) embodied on its free end toward the combustion chamber; having a nozzle needle (18) located axially movably and actuatably in a longitudinal recess of the nozzle body; and having a control chamber (20), embodied between the rear nozzle needle end face and the throttle disk, which chamber is in hydraulic communication with a pressure connection (16) serving to deliver fuel, the improvement comprising a cylindrical retaining body (12a) disposed in the injector body (12) and receiving the booster piston or pistons and the valve plate (24) that contains the control valve (40).

Kienzler et al. does not show having a throttle disk, closing off the rear end remote from the nozzle outlet of the longitudinal recess and located between the nozzle body and the control valve, which throttle disk forms an opening stop for the nozzle needle and which cooperates with the rear end face remote from the nozzle outlet of the nozzle needle to thereby limit the opening stroke of the nozzle needle.

Art Unit: 3752

However, Schuerg et al. does teach having a throttle disk, closing off the rear end remote from the nozzle outlet of the longitudinal recess and located between the nozzle body and the control valve, which throttle disk forms an opening stop for the nozzle needle and which cooperates with the rear end face remote from the nozzle outlet of the nozzle needle to thereby limit the opening stroke of the nozzle needle (paragraphs 0029, 0030, 0031 and 0032).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the injector of Kienzler et al. with the disk of Schuerg et al. to meet the demand for different flow cross sections (paragraph 0029).

Re claim 12, Kienzler et al. shows wherein the valve plate (Fig. 1, 24) is fitted into a central axial bore (26) in the retaining body.

Re claim 13, Kienzler et al. shows a booster housing (Fig. 1, 22) having a central axial bore receiving the booster piston or pistons and a piezoelectric actuator, is disposed in the axial bore of the retaining body, above the valve plate.

Re claims 14-16, Kienzler et al. shows wherein the retaining body (Fig. 1, 12a) rests with its lower end face toward the nozzle body (12b).

However, Schuerg et al. shows that it is flatly and sealingly on an adjoining upper end face of the throttle disk (Fig. 2, 64a).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the injector of Kienzler et al. with the

Art Unit: 3752

disk of Schuerg et al. to meet the demand for different flow cross sections (paragraph 0029).

Re claims 17-20, Kienzler et al. shows wherein that the valve plate is sealingly braced against the upper end face of the throttle disk by a prestressing element (Fig. 1, 28).

Re claims 21-23, Kienzler et al. shows wherein the prestressing element (Fig. 1, 28) that presses the valve plate against the throttle disk is braced on its back side on a shoulder of the axial bore of the retaining body, and thus is braced on the retaining body (12a).

Re claims 24-26, Kienzler et al. shows a tube spring (paragraph 0020) which serves as the prestressing element and is disposed in the axial bore of the retaining body (12a) surrounding the booster housing (22) over part of its length.

Re claims 27-29, Kienzler et al. shows a piezoelectric actuator (paragraph 0022) prestressed in the injector body by a spring, the prestressing spring of the piezoelectric actuator simultaneously serving as the prestressing element (Fig. 1, 28) for the valve plate.

Re claim 30, Kienzler et al. shows the booster housing and the valve plate form one integral component (Fig. 1, 22 and 24).

Conclusion

Art Unit: 3752

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN CERNOCH whose telephone number is (571)270-3540. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. C./

Examiner, Art Unit 3752

Art Unit: 3752

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752